IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#1

IN RE APPLICATION OF:

KIYOJI TAKAGI ET AL

SERIAL NO. 09/505,468 GROUP ART UNIT: 1773

EXAMINER: NAKARANI, DHIRAJLAL S

FOR: MULTILAYERED MOLDINGS

DECLARATION UNDER 37 C.F.R. 1.132

HONORABLE COMMISSIONER OF PATENTS & TRADEMARKS

WASHINGTON, D.C. 20231

SIR:

Now comes Kiyoji TAKAGI, a citizen of Japan, and a resident of c/o Mitsubishi Engineering-Plastics Corporation, Technical Center, 6-2, Higashi-Yahata 5-chome, Hiratsuka-shi, Kanagawa-ken, Japan, who declares and says that:

1. I graduated from the University of Mie, Faculty of Engineering, Chemistry Department of Resources (Master degree) in March, 1986.

2. I was employed by Mitsubishi Petrochemical Co., Ltd., from April 1986 to September 1994, was employed by Mitsubishi Chemical Corporation from Oct 1994 to July 1995 and have been employed by Mitsubishi Engineering-Plastics Corporation since August 1995 and have been engaged in the research and development of engineering plastics.

3. I am an inventor of U.S. Patent Application, Serial No. 09/505,468.

4. I have read the Office Action dated October 28, 2002, have understood the Examiner's rejection of the invention claimed in the above application, and have studied USP 4,842,951.

5. In USP 4,842,951, as a gas permeation-resistant layer, an ethylene-vinyl alcohol copolymer (Eval EP-F101 by Kuraray Co., Ltd in Example 1 which is equal to Eval F101) and an ethylene-vinyl alcohol copolymer (Soanol ET by Nippon Gosei Kagaku K.K in Example 2) were used.

6. As seen from attached catalogue by Kuraray Co., Ltd obtained by the homepage (address: http://www.eval.jp/products/index.html) with English partial translation, the ethylene-vinyl alcohol copolymer used in Example 1 of USP 4,842,951 has a flexural modulus of **36,000** kg/cm^2.

7. As to Soanol ET by Nippon Gosei Kagaku K.K in Example 2, I have not obtained a catalogue disclosing the flexural modulus thereof. So, under my control, the flexural modulus of Soanol ET by Nippon Gosei Kagaku K.K was measured according to ASTM D790. As the result of measurement, the flexural modulus of Soanol ET by Nippon Gosei Kagaku K.K according to ASTM D790 was **40,500** kg/cm^2.

8. As seen from the above results, both Eval EP-F101 by Kuraray Co., Ltd and Soanol ET by Nippon Gosei Kagaku K.K which were used in USP 4,842,951 are out of scope in the present invention (not more than 5,000 kg/cm^2) measured by a ASTM D790.

9. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

10. Further, deponent saith not.

Date: February 24, 2003

Kiyoji Takagi

Kiyoji TAKAGI

5. Mechanical Properties of <Eval>

Mechanical properties of an injection molded test piece

Item	Unit	Method	Brand
.....			F101 .....
..			
(last item)			
(Flexural	kg/cm^2	ASTM D790	**3.6×10^4**
Modulus)	MPa	ISO 178	3.8×10^3

4. 〈エバール〉の熱的性質

項目	単位	測定条件	規格				
			L101	F101	H101	E105	G156
融点	℃	ISO3143（DSC吸熱ピーク温度）	191	183	175	165	157
ビカット軟化温度	℃	ISO306（H.D.Tテスター法）	180	173	165	155	146
結晶化温度	℃	———	167	161	151	142	138
ガラス転移点	℃	———	72	69	62	55	50
溶融粘度	Pa·s	ISO11443（190℃, 10^3sec^{-1}）	—	3.0×10^2	3.0×10^2	1.3×10^2	0.6×10^2
	Pa·s	ISO11443（210℃, 10^3sec^{-1}）	8.0×10^1	2.0×10^2	1.9×10^2	0.7×10^2	0.5×10^2
	Pa·s	ISO11443（230℃, 10^3sec^{-1}）	1.1×10^1	1.4×10^2	1.1×10^2	0.2×10^2	0.4×10^2

5. 〈エバール〉の機械的性質

射出成形試験片の機械的性質

項目	単位	測定条件	銘柄				
			L101	F101	H101	E105	G156
降伏点強度	kg/cm²	ASTM D-638（引張速度10%/分）	960	790	680	600	440
	MPa	ISO 527	—	—	—	—	—
破断点強度	kg/cm²	ASTM D-638（引張速度10%/分）	760	730	600	520	380
	MPa	ISO 527	38	34	27	26	22
降伏点伸度	%	ASTM D-638（引張速度10%/分）	6	8	8	7	3
		ISO 527	—	—	—	—	—
破断点伸度	%	ASTM D-638（引張速度10%/分）	200	230	250	280	330
		ISO 527	20.8	14.4	35.9	17.0	13.9
ヤング率	kg/cm²	ASTM D-638（引張速度10%/分）	—	2.7×10^3	2.4×10^3	2.1×10^3	—
	MPa	ISO 527	3.0×10^3	2.7×10^3	2.6×10^3	2.4×10^3	2.3×10^3
アイゾット衝撃強度	kJ/m²	ASTM D-256 ノッチ付	1.1	1.7	1.5	1.0	1.3
	kJ/m²	ISO 180 ノッチ付	4.0	2.9	4.0	3.4	1.8
ロックウェル表面硬度	M	ASTM D-785	96	100	93	88	70
	M	ISO 2039-2	96	100	93	88	70
テーバー摩耗度	mg	ASTM D-1175 *1	—	1.2	2.0	2.2	—
スティフネス	kg/cm²	ASTM D-747	—	3.7×10^3	3.4×10^3	3.1×10^3	—
曲げ強度	kg/cm²	ASTM D-790	—	1220	1100	1000	—
	MPa	ISO 178	127	108	97	88	78
曲げ弾性率	kg/cm²	ASTM D-790	—	3.6×10^4	3.2×10^4	3.0×10^4	—
	MPa	ISO 178	4.5×10^4	3.8×10^4	3.5×10^4	3.0×10^4	2.8×10^4

*1 1000回転、摩耗輪CS-17、荷重1kg

〈エバール®〉フィルムについては「10.〈エバール®〉フィルムの銘柄別特性値」をご参照ください。